The CMIP5 Data Archive in IPCC AR5

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AR4 Data Management

- AR4 DM for IPCC WG I has been performed by PCMDI within CMIP 3
- AR4 DM for WG II + III has been performed by BADC and WDCC within the IPCC DDC
- Main drawbacks:
  - Different data sources were used in the IPCC AR4 (CMIP 3 in WG I, IPCC TAR still in WG II + III)
  - Field based data access only for the subset of time series in the IPCC DDC (monthly means of surface climatology)
  - No reference data archive has been conserved in AR4 except IPCC DDC

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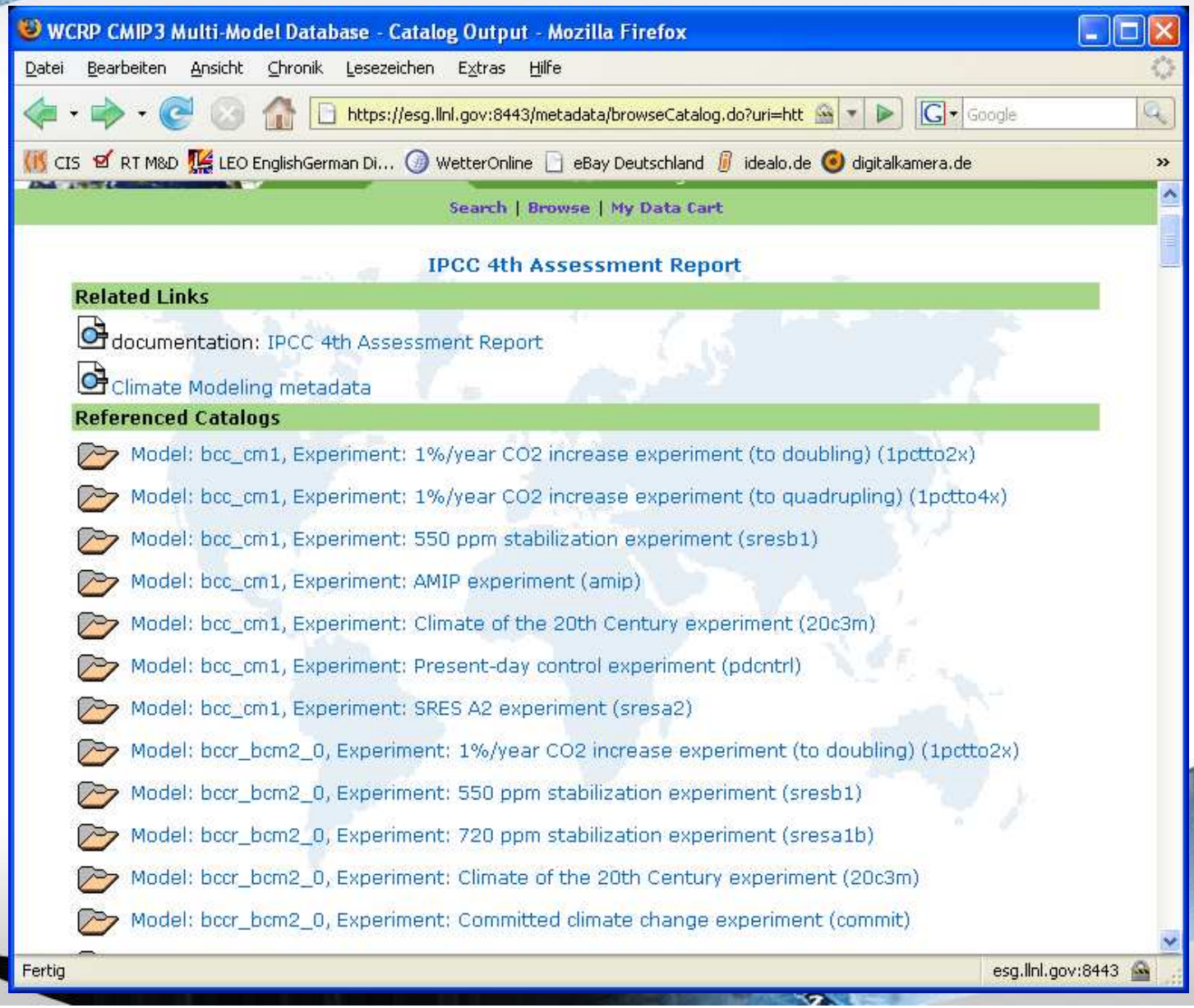
PCMDI AR4 data catalogue



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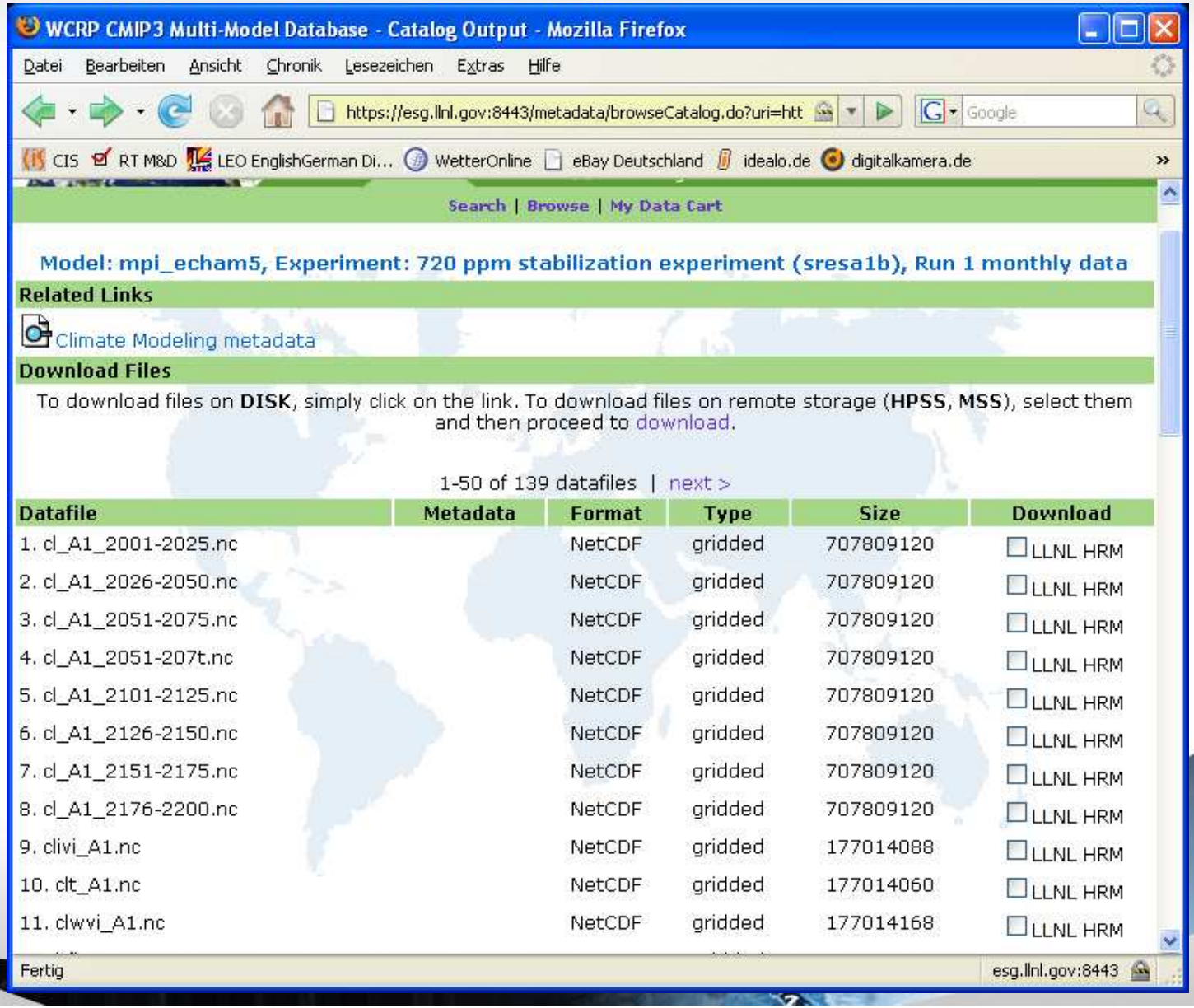
PCMDI AR4 file-based data access



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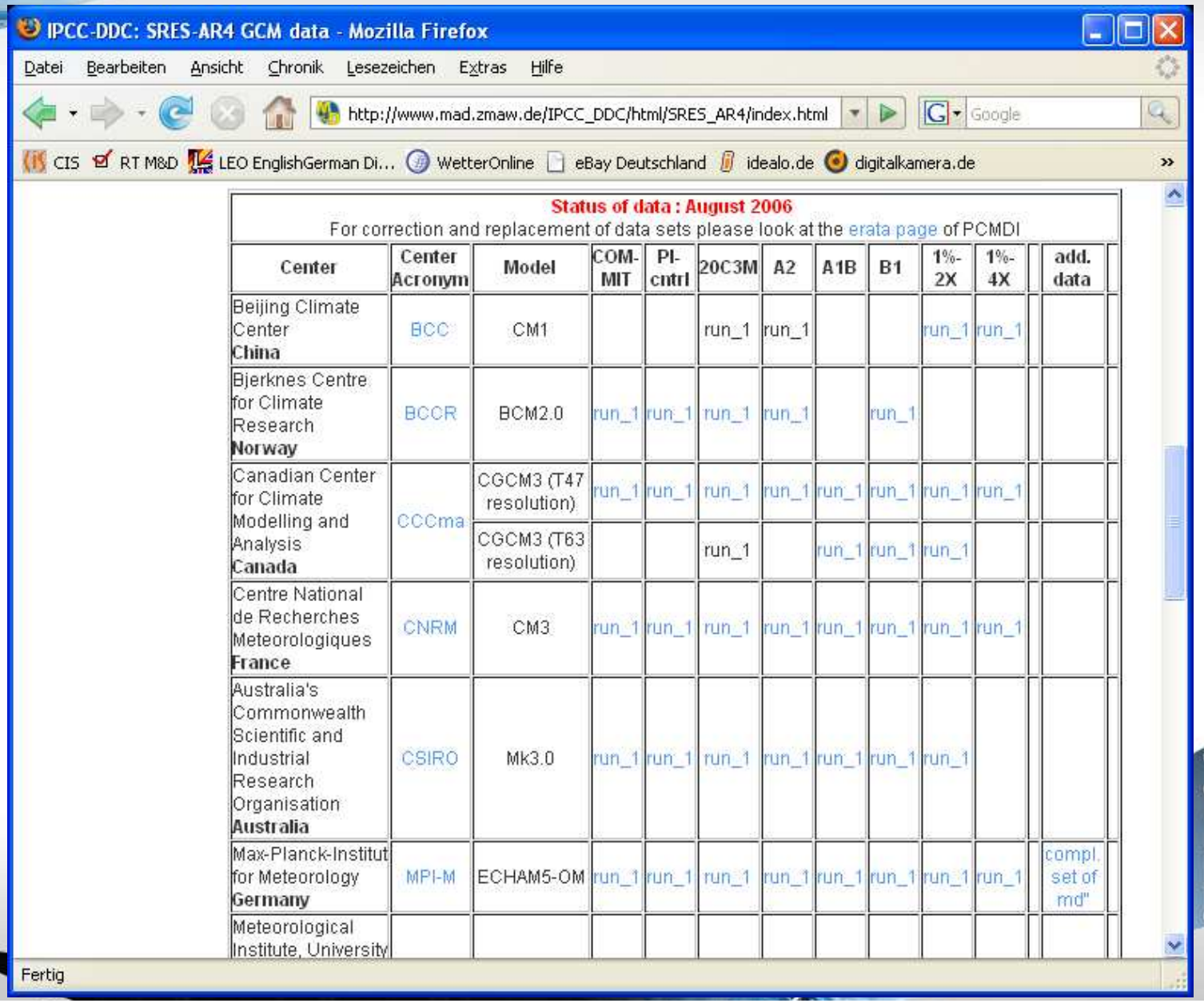
IPCC DDC AR4 data list



Status of data : August 2006

For correction and replacement of data sets please look at the erata page of PCMDI

Center	Center Acronym	Model	COM-MIT	PI-cntrl	20C3M	A2	A1B	B1	1%-2X	1%-4X	add. data
Beijing Climate Center **China**	BCC	CM1			run_1	run_1			run_1	run_1	
Bjerknes Centre for Climate Research **Norway**	BCCR	BCM2.0	run_1	run_1	run_1	run_1		run_1			
Canadian Center for Climate Modelling and Analysis **Canada**	CCCma	CGCM3 (T47 resolution)	run_1	run_1	run_1	run_1	run_1	run_1	run_1	run_1	
		CGCM3 (T63 resolution)			run_1		run_1	run_1	run_1		
Centre National de Recherches Meteorologiques **France**	CNRM	CM3	run_1	run_1	run_1	run_1	run_1	run_1	run_1	run_1	
Australia's Commonwealth Scientific and Industrial Research Organisation **Australia**	CSIRO	Mk3.0	run_1	run_1	run_1	run_1	run_1	run_1	run_1		
Max-Planck-Institut for Meteorology **Germany**	MPI-M	ECHAM5-OM	run_1	run_1	run_1	run_1	run_1	run_1	run_1	run_1	compl. set of md"
Meteorological Institute, University											

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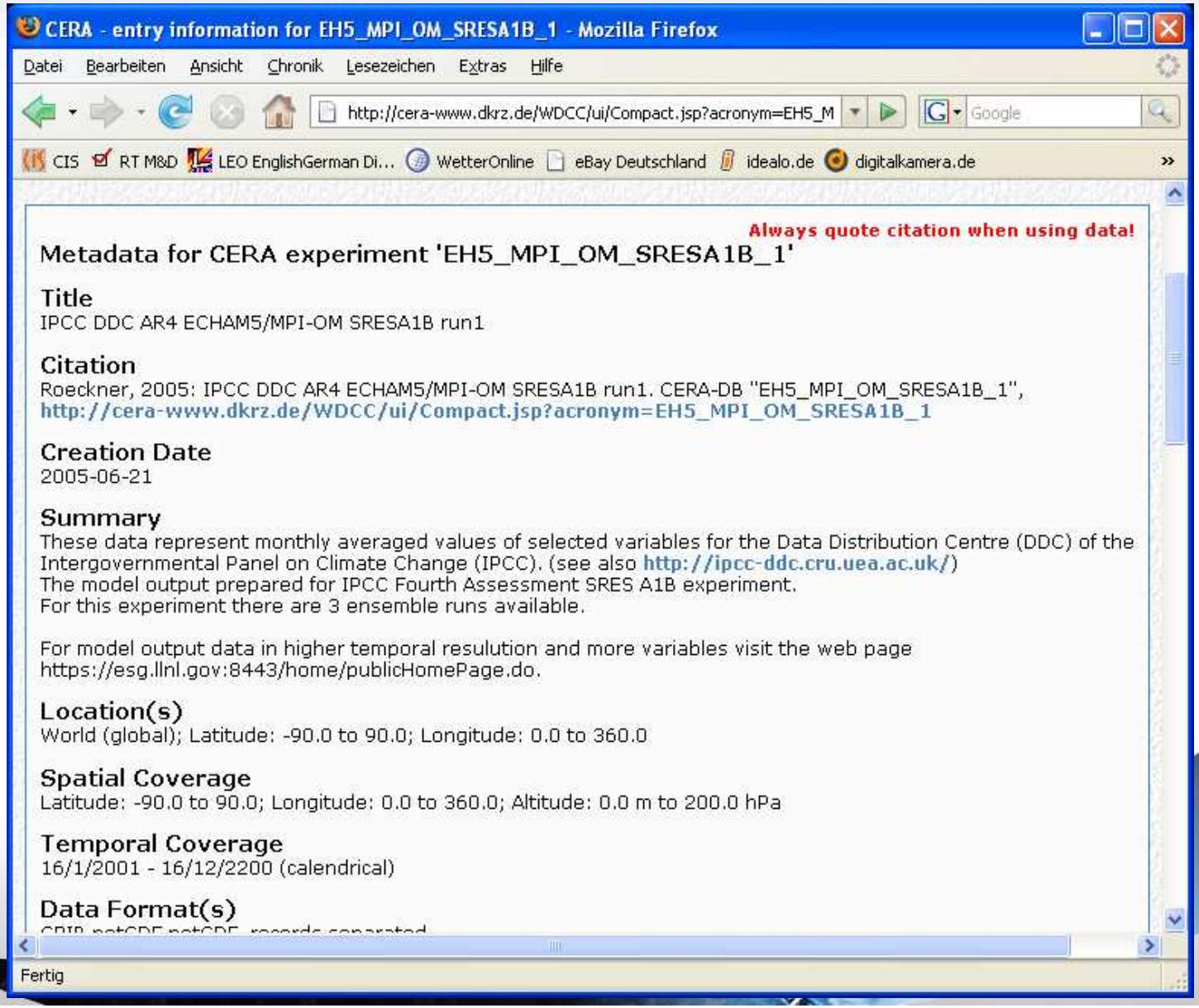
IPCC DDC AR4 data catalogue summary



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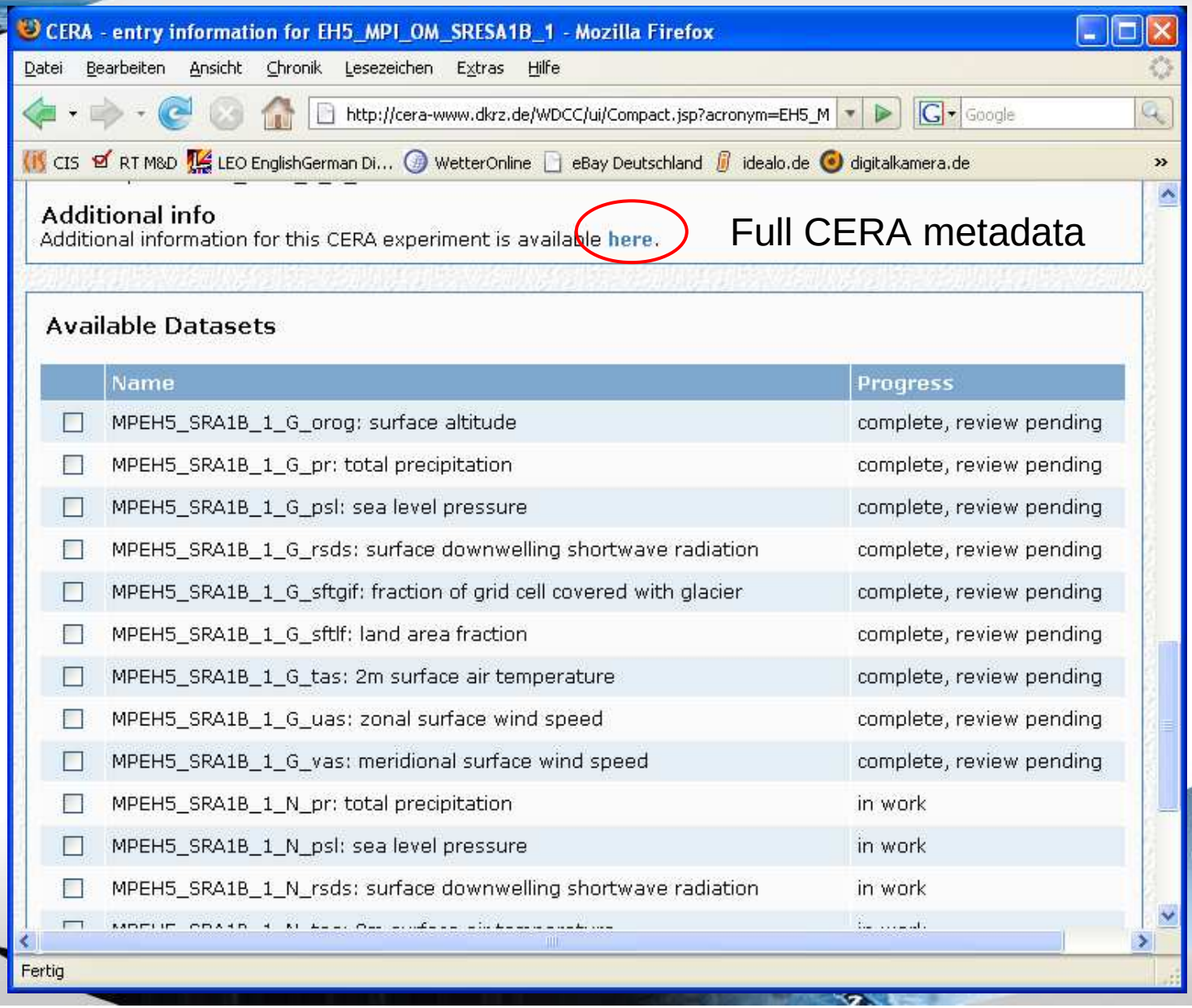
IPCC DDC AR4 field-based data access



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IPCC DDC AR4 data products

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AR5 data management requirements from WG II + III

- Requirements for model data:
  - Data products are expected and not model raw data
  - Complete daily / sub-daily time series of individual variables, climate indices, climate extremes
- Requirements for metadata (browse + use):
  - Searchable data repository including information to decide on the usefulness of the data entity (e.g. experiment, model, variable, etc.) → METAFOR
  - Complete information to allow for data processing and use the model data (e.g. grid, variable, unit, time) → GRIDSPEC

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AR5 data management requirements from WG II + III

- Requirements for services:
  - Instructions how to use the data (guidance material)
  - Data processing options for aggregation and extraction in time and space and for visualization
  - Specific user support (FAQs and help desk / request tracker)

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AR5 data management concept

- Database for IPCC AR5 will be produced within CMIP5
- Range of estimates for amount of data for CMIP5 requested variables archive 0.6 – 1.2 PB (September 2009)
- Two different layers of data management are involved:
  - Production and archive creation within CMIP5 as scientific research data archive
  - Permanent archiving within IPCC Reference Data Archive which is presently the IPCC DDC (WDCC + BADC for GCM data + products)
- Memorandum of Understanding between BADC, PCMDI and WDCC/DKRZ to share data mangement responsibility for CMIP5 / IPCC AR5 (Dec. 2008)

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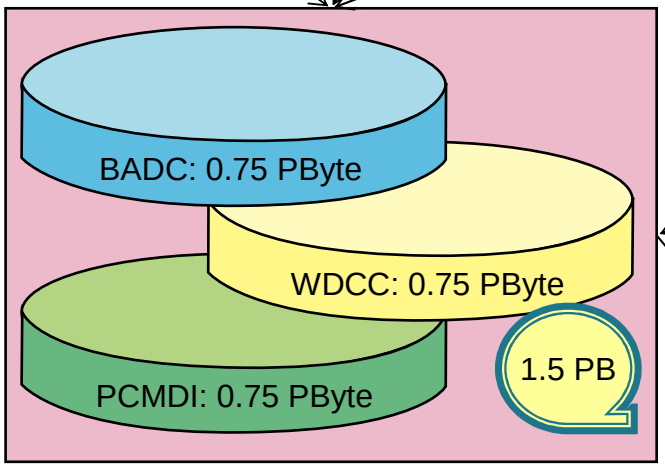
CMIP5/AR5 Data Management Concept

Gateway PCMDI

Gateway BADC / IPCC DDC

Gateway WDCC / IS-ENES

CMIP5/AR5
Data Federation



Data Nodes:
MPI-M / DKRZ
Hadley Centre / BADC
IPSL
NCAR
GFDL
Other Centres

Mirrors:
Australia
Japane
Other ?

CMIP5 Requested Variables
IPCC AR5 Reference Data Archive
(snapshot end of 2010)

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IPCC AR5 Reference Data Archive

(Partly) open issues

- Sharing responsibilities within the CMIP5/AR5 federation after taking the IPCC AR5 data snapshot
  - Continuation of CMIP5 scientific data archive
  - Permanent archiving of IPCC AR5 reference data archive and generation of application adapted data products
- Data products and services in IPCC DDC
  - 30 year means
  - Extremes
  - Field-based data access
  - Re-gridding of complex grids to regular lat-lon grid
  - Extraction of geographical subregions
  - Format conversion (Excel, GIS)
  - Visualisatuon
  - Guidance Material
  - FAQ and help desk
  - ..

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